

Appendix C Ultra ATA Devices

This appendix discusses the guidelines and features for Ultra ATA drives.



NOTE This system supports a mixed configuration of UATA/IDE, SCSI, and SATA hard drives. While HP supports the presence of IDE drives, it does not ship any configurations using those drives.

This appendix includes the following sections:

- “Ultra ATA Jumpers” on page 160
- “Ultra ATA Cables” on page 160
- “Drive Installation Guidelines” on page 160
- “SMART” on page 162
- “Jumpers” on page 162

Ultra ATA Jumpers

Ultra ATA drives are configured with jumper settings. With cable-select, the drive is configured as either Master (Drive/Device 0) or Slave (Drive/Device 1) by its physical attachment to the cable.

If you purchase a third-party hard drive, refer to the documentation included with the drive kit to ensure proper cable installation and configuration.



NOTE All drives on a controller channel need to have their jumpers either in the cable-select mode or have the individual drive jumper installed on the appropriate Master (Drive/Device 0) or Slave (Drive/Device 1) position.

Ultra ATA Cables

When installing a second device on the primary controller, you must use an industry-standard, 80-conductor Ultra ATA cable for optimal performance. These cables have a maximum length of 18 inches and a maximum distance of six inches between the two devices for a two-drive cable.

Drives operating at speeds faster than those of the Ultra ATA-33 devices require industry-standard, 40-pin, 80-conductor cables to maintain the higher data transfer rates possible with the improved technology.

When using Ultra ATA-133, -100, -66, and slower -33 drives in the same system, each drive will operate at its appropriate data transfer rate.



NOTE On a two-drive cable, the Drive/Device 0 connector is always the farthest one from the system board connector and the Drive/Device 1 connector is always the closest to the system board connector.



NOTE Some cables might be labeled “Drive 0” instead of “Device 0” and “Drive 1” instead of “Device 1.”

Drive Installation Guidelines

The HP Workstation xw4200 system board has one Ultra ATA (IDE) controller channel designated as the primary controller.

The controller can have up to two devices attached to it, and all drives are connected to this controller using an industry-standard, 80-conductor cable.



NOTE The industry-standard, 1.44-MB diskette drive has its own separate channel and is not included as a part of the maximum four drives.

Any drive attached to a controller must have a drive designation. If only a single drive is connected to a controller and its jumper is in the cable-select position, it is designated as the Master Drive (Drive/Device 0) by its attachment to the Drive/Device 0 cable position. If two cable-selected drives are connected to a single controller, one will be designated by its attachment to the cable as the master (Drive/Device 0) and the other as slave (Drive/Device 1).

Device Classes

To determine the best drive attach sequence, Ultra ATA/ATAPI drives are segregated into four different classes based on the bandwidth demands they place on an Ultra ATA controller. The most demanding devices are in Class 1. The least demanding devices are in Class 4. The following table illustrates those classes.

Table C-1 Device Classes

Class 1 Hard Drives	Class 2 High Speed Optical Drives	Class 3 Optical Storage Drives	Class 4 Magnetic Storage Drives
Ultra ATA-100 Ultra ATA-66 Ultra ATA-33	DVD DVD-CD R/W	R/W CD-ROM CD-ROM	LS-120 Tape Zip

General Attach Guidelines

- The lower the device class number, the faster the device and the more bandwidth required.
- Drives installed in the Device 0 position receive the greatest possible bandwidth.

Attach Sequence Rules by Class Priority

The following table summarizes the attach sequence rule.

Table C-2 General Attach Sequence Rule*

Sequence	Description
1	The lowest class drive—bootable hard drive recommended.
2	If only two drives, the last drive goes here; otherwise the lowest class of the remaining drives.

*If there are three or more devices, two or more of which are hard drives, two hard drives should be attached to the primary controller first before following the General Attach Sequence Rule.

Additional Drive Application Notes

- When replacing a hard drive, the replacement should be of the same type (Ultra ATA 33, -66, or -100) as that being removed to retain the same level of performance.
- When Ultra ATA and SATA hard drives are mixed in the same system, the SATA drive will become the boot drive unless the boot order is changed in Computer Setup (F10). The default boot order on this system prefers SATA, then Ultra ATA, then SCSI.

SMART

The Self Monitoring Analysis and Recording Technology (SMART) Ultra ATA drives for HP workstations have built-in drive failure prediction that warns the user or network administrator of an impending failure or crash of the hard drive. The SMART drive tracks fault prediction and failure indication parameters, such as reallocated sector count, spin retry count, and calibration retry count. If the drive determines that a failure is imminent, it generates a fault alert.

Jumpers

The specifications included below are the standard drive configurations.

CD-ROM or DVD-ROM Drive

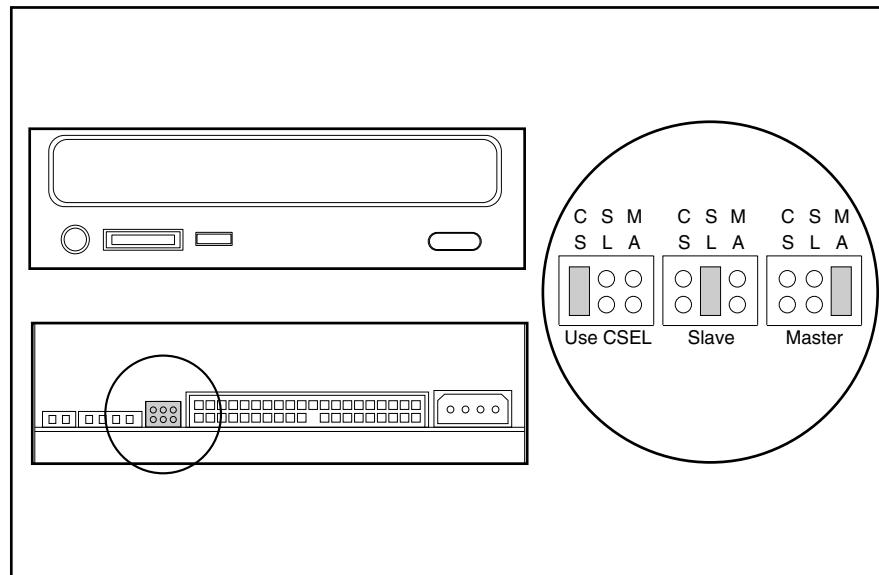


Figure C-1 CD-ROM or DVD-ROM Drive Jumper Connections